		Application No.	Applicant(s)
Notice of Allowability		10/802,431	FRISKEN ET AL.
		Examiner	Art Unit
		Alysa N. Brautigam	2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *16 March 2004*.

2. ☒ The allowed claim(s) is/are *1-21*.

3. ☐ The drawings filed on _____ are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

      Paper No./Mail Date _____ .

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 5/27/04, 6/28/04

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

DETAILED ACTION

EXAMINER'S AMENDMENT

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

2.   Authorization for this examiner's amendment was given in a telephone interview

with Andrew Curtin (Reg. No. 48,485) on 18 March 2005.

3.   The application has been amended as follows:

4.   Please amend paragraph **[0112]** at page 25 as follows:

[0112] To address this problem, our invention provides a method 1300 as shown

in Fig. 13 for generating a two-dimensional distance field within a cell associated with a

corner of a two-dimensional object, such as a glyph.

5.   Please amend paragraph **[0202]** at page 51 as follows:

[0202] The region 722 is used to locate 730 a set of pixels 731 associated with

the region. A set of components 741 for each pixel in the set of pixels 731 is specified

740. Then, antialiased intensities 751 are determined 750 for each component of each

pixel from distances in the set of cells. Here, the distances are reconstructed from the

set of cells. The distances are then mapped to the antialiased intensity, as described

above.

6.   Please amend paragraph **[0280]** at page 70 as follows:

[0280] Therefore, as shown in Figure 8, we exploit the distance field to provide

distance-based automatic hinting 800 for rendering glyphs at small point sizes. The first

step 810 in hinting is to scale and align the distance field to the pixel grid. This can be

done automatically from the given or derived font metrics, e.g., the cap-height, the x-

height, and the position of the baseline.   Font metrics can be derived automatically from

the distance field by using a gradient of the distance field to detect specific font metrics,

such as the cap-height. The step 810 can include a general transformation of the

distance field, e.g., a deformation, to enable a proper alignment to the pixel or pixel

component grid.

Drawings

7.   The drawings are objected to because of the following:

- Figure 7, Item 404 – Appears to be an extraneous item number

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in

reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate

prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Allowable Subject Matter

8.   Claims 1-21 are allowed.

9.   The following is an examiner's statement of reasons for allowance:

10.   Claims 1-21 are allowable because prior art fails to teach or disclose a system and method for antialiasing comprising the steps of representing a set of objects with a set of two-dimensional distance fields, partitioning each two-dimensional distance field into cells; identifying a **set of cells** associated with a region, and then **locating a set of pixels with the region**. Further, prior art fails to teach or suggest the determining of an anti-aliased intensity for each component of each pixel in the set of pixels wherein the determining further comprises **determining a distance for the component of the pixel** and **combining the corresponding distances to determine a combined distance**.

11.   Frisken et al. ("Adaptively Sampled Distance Fields: A General Representation of Shape for Computer Graphics," SIGGRAPH 2000) teaches many details of the claimed invention including a two-dimensional distance field representing an object (Applicant has defined "object" to be "two-dimensional objects, such as character shapes, corporate logos, and elements of an illustration contained in a document" in paragraph 0003 of the Applicant's specification), wherein the two-dimensional distance field is partitioned into cells (page 251, Figures 4a-d disclose the object ["R"] partitioned into cells), each cell including a method for reconstructing the two-dimensional distance field within the cell (page 251, section 3.3 – "Reconstructing ADFs", lines 1-2), including identifying a set of cells of a two-dimensional distance field representing an object, the set of cells associated with a region of the two-dimensional distance field to be rendered (page 251, Figures 4a-d discloses the set of cells of a two-dimensional distance field representing the object; page 250, Section 3.1, second paragraph, lines 3-5); and locating a set of pixels associated with the region (page 252, left column, lines 2-6 disclose the calculations including the x,y,z components such that the location of a set of pixels associated with a region is an inherent action performed by the method). However, Frisken does not disclose or suggest specifying a set of components for each pixel nor does Frisken specifically disclose the determination of an anti-aliased intensity for each component of the pixels. Further, Frisken does not teach or suggest the combination of the corresponding distances of each component of each pixel in the set of pixels to determine a combined distance.

12.   In addition, Applicant's remarks, dated 14 February 2005, and submitted in

response to the Non-Final Rejection of Patent Application Number 10/396,861, were

taken into consideration with respect to the instant application. Specifically, Applicant

provides rebuttal to the above-cited Frisken SIGGRAPH reference as well as to the

combination of Frisken et al. ("Adaptively Sampled Distance Fields: A General

Representation of Shape for Computer Graphics," SIGGRAPH 2000) in view of Russ

("The Image Processing Handbook, Fourth Edition") and in further view of Kimmel et al.

(United States Patent Publication Number: 2002/0097912). Where appropriate, the

Examiner has considered the arguments and their merits and found that, with respect to

the steps of partitioning, associating, and identifying, Applicant's statement are not

sufficient to overcome the Frisken reference. However, with respect to the steps of

"locating a set of pixels associated with the region" and "determining an antialiased

intensity for each component of each pixel in the set of pixels," Applicant's states, "the

locations of pixels in a distance field reveal nothing about the locations of pixels in an

image" and Frisken does not disclose "any description of locating a set of pixels in a

region of a distance field."   Further, in response to "determining an anti-aliased intensity

for each component of each pixel in the set of pixels," Applicant states, "'sub-pixel

accuracy' does not mean that Kimmel computes distances for each sub-component of a

pixel." After review of Applicant's arguments and the corresponding references, the
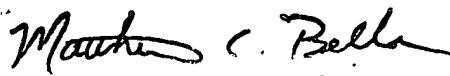
Examiner agrees with these assertions.

13.   Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

14.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alysa N. Brautigam whose telephone number is 571-272-7780. The examiner can normally be reached on 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

anb

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